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Predictors of treatment attrition and treatment length in Parent-Child Interaction Therapy in Taiwanese families☆,,☆☆

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Abstract

Parent–Child Interaction Therapy (PCIT) has been used successfully in the United States and in other countries around the world, but its use in Asian countries has been more limited. The present study is the first of its kind to examine the predictors of treatment attrition and length in a sample of Taiwanese caregivers and their children. It is also the first to examine PCIT outcomes in Taiwanese families. Maladaptive personality characteristics of the caregiver were the best predictor of attrition, followed by single-parent, removal of the child from the home, and lower levels of caregiver education. Treatment length was predicted by child minority status and parent–child interactions (i.e., parent commands and negative parent talk). In terms of outcomes, statistically significant treatment changes were noted for all treatment outcome variables at post-treatment and at 3-month follow-up. These findings suggest that PCIT is a promising intervention for this population. The predictors of treatment attrition and length can be used when Taiwanese caregiver–child dyads present for services so that additional assistance can be provided prior to or during treatment to increase adherence to the recommended number of treatment sessions for maximal impact. Future studies may replicate the present study with a larger clinical sample to examine the long-term effects of PCIT and to include a no-treatment control condition to afford a more robust empirical evaluation.

Keywords

Parent–Child Interaction Therapy; Behavioral parent training; Disruptive behavior; Predictor; Dropout

1. Introduction

Maladaptive parenting styles or practices have been found to be associated with the development of behavior problems in children (e.g., Dishion, French, & Patterson, 1995;

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Patterson & Stouthamer-Loeber, 1984). Children with behavior problems, in turn, are at risk for academic failing and social difficulties in childhood and serious antisocial behavior and criminal activity in adolescence and adulthood (e.g., Werba, Eyberg, Boggs, & Algina, 2006). Behavioral parent training (BPT) programs, including Parent–Child Interaction Therapy (PCIT), are often successful at improving parenting skills and helping parents address child behavior problems (e.g., Maughan, Christiansen, Jenson, Olympia, & Clark, 2005; Thomas & Zimmer-Gembeck, 2007). PCIT is an intensive, evidence-based parent–child dyadic treatment program that has been evaluated in over 30 controlled studies and has been classified as an empirically supported treatment used primarily and successfully for 2- to 7-year-old children with disruptive behavior problems (e.g., Chambless & Ollendick, 2001; Eyberg, Nelson, & Boggs, 2008). Past PCIT research (e.g., Chaffin et al., 2004; Galanter et al., 2012) has included children up to the age of 12 and suggests that PCIT may work for older children.

The goal of PCIT is to promote positive parenting skills and alter specific patterns of the interaction that cause dysfunction in the parent–child relationship (Eyberg & Funderburk, 2011; McNeil & Hembree-Kigin, 2010). PCIT is conducted in two phases: child-directed interaction (CDI) and parent-directed interaction (PDI). During the CDI phase, the focus is on teaching parents to provide positive consequences (e.g., praise) for children's appropriate behaviors (e.g., sharing), while ignoring minor disruptive behaviors. During the PDI phase, parents are taught to implement effective and consistent discipline strategies (e.g., ignoring, time-out) that specifically address children's inappropriate behaviors (e.g., whining, non-compliance; Eyberg & Funderburk, 2011; McNeil & Hembree-Kigin, 2010). PCIT has several defining features that distinguish it from most other BPT interventions: 1) it uses a parent–child dyadic delivery format in which the parent and the child both attend treatment sessions, 2) it uses direct, in vivo coaching whereby parents practice new skills and get immediate feedback about performance, 3) it requires continuous observation and coding of parent–child interactions throughout treatment to assess progress, and 4) it is a performance-based treatment that continues until parents demonstrate skill mastery criteria and the child no longer exhibits clinically elevated behavioral problems (Driskell, Willis, & Copper, 1992; McNeil & Hembree-Kigin, 2010).

1.1. Attrition in PCIT

Although BPTs are effective in reducing child behavior problems, the intensive treatment inevitably leads to attrition in some cases. Unfortunately, attrition affects treatment outcomes, as families do not receive the benefits of improved child disruptive behavior, reduced parenting stress, or enhanced parenting skills associated with BPTs (Boggs et al., 2004). Attrition rates during PCIT have ranged from 10% (Matos, Torres, Santiago, Jurado, & Rodriguez, 2006) to 69% (Lanier et al., 2011). Pretreatment variables that have predicted attrition include assignment to the waiting list control group and young maternal age (Werba et al., 2006). Other variables that have predicted attrition include single parenthood (Bagner, 2013), high parental stress (Capage, Bennett, & McNeil, 2001; Werba et al., 2006), more negative or inappropriate maternal talk toward the child (e.g., criticism, sarcasm, smart talk; Fernandez & Eyberg, 2009; Werba et al., 2006), less maternal positive talk (labeled and unlabeled praises; Fernandez & Eyberg, 2009), lower maternal intellectual functioning

(Fernandez & Eyberg, 2009), and depressive symptoms (Fernandez & Eyberg, 2009). Child factors that have predicted dropout include having a young child, having a child with comorbid behavior problems, and having a child with developmental delay (Bagner, 2013).

1.2. Treatment length

The treatment length of PCIT may be a barrier to treatment completion, as families are requested to stay in treatment until the caregiver reaches pre-set skill levels and rates their child's behavior within normal limits. Treatment typically lasts for 10 to 16 sessions (Gallagher, 2003; Herschell, Calzada, Eyberg, & McNeil, 2002), although some variability has been observed in other cultures, with more sessions required (Matos et al., 2006; McCabe & Yeh, 2009). For example, McCabe and Yeh (2009) examined the efficacy of PCIT with Mexican American parent–child dyads whose 3- to 7-year-old child had a clinically significant behavior problem and found that 18.7 sessions were needed for these families in the standard format of PCIT, while Matos et al. (2006) found a 16-session average when using PCIT with Puerto Rican families. In a sample of Chinese families in Hong Kong, parents with more personal and family difficulties required more than 20 sessions (Leung, Tsang, Heung, & Yiu, 2009). As can be discerned from prior research, some families require 16 or more sessions to complete PCIT, which can contribute to attrition if not addressed properly.

1.3. PCIT in other countries

Studies have been conducted to confirm the effectiveness of PCIT for families in countries outside of the United States such as Australia (Nixon, Sweeney, Erickson, & Touyz, 2003; Thomas & Zimmer-Gembeck, 2012), The Netherlands (Abrahamse et al., 2012), and the People's Republic of China, Hong Kong (Leung et al., 2009; Leung, Tsang, Sin, & Choi, 2015). These studies have found that PCIT is effective in other cultures when it is delivered as stipulated in the PCIT protocol (Leung et al., 2009, 2015; Nixon et al., 2003), with some minor tailoring for cultural appropriateness. In the study with Chinese families in Hong Kong, culturally appropriate examples were provided for various techniques (e.g., labeled praise, ignoring); otherwise, standard PCIT was delivered (Leung et al., 2009, 2015).

1.4. Purpose of current study

Although prior research has examined the use of PCIT with Chinese families in Hong Kong (Leung et al., 2009, 2015), the present study is the first of its kind to examine the use of PCIT with Taiwanese families. The first goal of the present study was to examine the predictors of treatment attrition and length in PCIT. Predictors used in the analyses for treatment attrition and length included those assessed in this study that have predicted these outcomes in past research. The second goal was to determine whether PCIT resulted in changes in child and parent behaviors in a sample of Taiwanese families whose children had disruptive behavior or conduct problems. Based on past research, we predicted that positive parenting behaviors would increase while negative parenting behaviors and child behavior problems would decrease.

2. Method

2.1. Participants

Sixty-one Taiwanese caregivers and their children were recruited for participation in the current study. Forty-four children, ranging in age from 3 to 11 years, and their caregivers were enrolled in PCIT after they completed a pre-treatment assessment. The age of caregivers ranged from 23 to 66 years. Of the 44 parent–child dyads, 32 children and their caregivers completed treatment. Twelve children and their caregivers dropped out of treatment. Socio-demographic characteristics of all participants, including those who completed and dropped out of treatment, are shown in Table 1.

2.2. Procedure

Families were recruited from Taipei City and New Taipei City (34.4%) in northern Taiwan, Chia-Yi City and County (37.7%) in southern Taiwan, and Kaohsiung City and County (27.9%) in southern Taiwan. The study received university and hospital institutional review board approval, as treatment occurred at various locations depending on the needs and location of the families. Children had externalizing symptoms or disruptive behavior problems that led the parents to seek treatment in one of two ways: (a) self-referral in response to flyers and word of mouth or (b) referral by mental health professionals, including child psychiatrists, clinical psychologists, and social workers. Each of the 61 caregiver–child dyads were mailed a research packet containing an informed consent form, a demographic questionnaire, a child assessment packet, a caregiver assessment packet, and a self-addressed, stamped envelope. The child and caregiver assessment packets included a series of measures (described later), all of which were stapled in a random order for the parents to complete and return a week before the pre-treatment assessment. Although all 61 caregivers agreed to participate in initial discussions about the project, two caregiver–child dyads did not return their research packets and were unable to be reached.

Fifty-nine caregiver–child dyads were screened for inclusion in the study during the pre-treatment assessment, which included a semi-structured intake interview and three 5-minute observations of parent–child interactions. To be included in the study, children had to be of normal intelligence and parents had to rate the child's behavior as clinically elevated on the Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) and/or on the Child Behavior Checklist for ages 1.5–5 years or 6–18 years (CBCL 1.5–5/6–18; Achenbach & Rescorla, 2001). Fifteen children were between 8 and 11 years of age and were included because they were deemed by the primary therapist as appropriate candidates for PCIT based on the presenting problems and the child's level of emotional (e.g., interest in play with the parent and response to the parent's attention) and physical (e.g., size) development. Caregiver–child dyads were excluded from the present study if (a) the child presented with developmental delay, autism spectrum disorder requiring substantial support, psychotic symptoms/disorders, or serious medical illnesses, (b) the caregiver presented with below average intellectual functioning, (c) the caregiver presented reluctance or unwillingness to regularly attend therapy sessions, or (d) the child was older than the age of 7 and they were highly aggressive, not motivated by parental attention, and/or caregiver did not have the physical strength to implement the time-out procedure. Given that some referrals were

received from the child welfare system, case managers were instructed not to refer families if the child was expected to remain with the caregiver (or the present caregiver) for less than 12 months or if the caregiver was identified as a sexual abuse perpetrator.

Nine (15.25%) parent–child dyads who completed the pre-treatment assessment were excluded due to borderline intellectual disability of the child (n = 2), organic brain pathology of the child (n = 1), and the absence of clinically significant externalizing behavior problems (n = 6). A total of 50 parent–child dyads were eligible to receive PCIT; however, six declined due to an unwillingness to regularly attend therapy sessions (n = 4) and/or time conflicts (n = 2). Of the 44 caregiver–child dyads, 12 (27.27%) were considered treatment dropouts, as they signed the consent form, completed the pre-treatment session(s), and attended at least one treatment session but did not conclude treatment. Of those who dropped out, the mean number of sessions completed was 14.17 (SD = 9.55, range = 2–31). Half of those who dropped out participated in the CDI phase, attending a mean of 7.17 sessions (SD = 4.02, range = 2–12), while the other half participated in both the CDI and PDI phases, attending a mean of 21.17 sessions (SD = 8.18, range = 9–31). Thirty-two (72.73%) caregiver–child dyads reached mastery criteria for CDI and PDI and successfully completed treatment with a mean number of 25.44 sessions (SD = 5.70, range= 14–41). All treatment completers returned to participate in a 3-month follow-up assessment. All sessions were conducted according to procedures outlined in the PCIT treatment manual (Eyberg & Members of Child Study Laboratory, 2010) by a lead therapist and a co-therapist. The lead therapist was a doctoral level licensed child clinical psychologist with training as a PCIT therapist. The co-therapists were master's level licensed clinical psychologists or graduate students in clinical psychology. All co-therapists were trained in PCIT by the lead therapist, attended a PCIT workshop, and attended weekly group supervision sessions with the lead therapist. Standard PCIT procedures were utilized in all locations. Caregivers were provided with bug-in-the-ear listening devices and wireless transmitters. For observation and live coaching, one-way mirrors and/or video-recorded cameras and computers were used. The time-out procedure varied somewhat depending on the location of the treatment as not all facilities had a time-out room. In instances when the time-out room was not available, the goal was to ensure that the child's environment was safe (i.e., “child proof”) and free from distractions or anything the child might find reinforcing (e.g., through the use of swoop and go). Parents were compensated approximately $10 USD for all assessments (i.e., pre-treatment, post-treatment, and follow-up) but were not compensated for treatment. Children received small gifts equivalent to approximately $5 USD as a “graduation” gift.

2.3. DPICS training and treatment fidelity

2.3.1. Training—In the present study, the training of the DPICS coders (master's level clinical psychology students) included a 40-hour group training led by the first author and 60 h of individual practice that included repeatedly reviewing the coder training manual (Eyberg, Nelson, Duke, & Boggs, 2010), working in the abridged workbook (Fernandez, Chase, Ingalls, & Eyberg, 2010), and coding training videotapes. The training continued until all trainees obtained an average Cohen's kappa of .78 on a DVD coding test. Reliability checks of the DPICS coding (for a randomly selected 20% of the sample) resulted in a Cohen's kappa of .87.

2.3.2. Treatment fidelity—All pre-, post-, follow-up and therapy sessions were videotaped, and the lead therapist and co-therapists used session checklists from the PCIT treatment protocol (Eyberg & Members of Child Study Laboratory, 2010) to code treatment fidelity for 25% of randomly selected sessions for each family. The lead therapist checked off each item covered during the treatment sessions. Accuracy was 97.46% with the PCIT treatment protocol. A second coder (graduate research assistant) used the same checklist to record treatment fidelity data from progress notes and videotapes of the treatment sessions. A 95.6% interobserver agreement (range = 88.67–100%) was obtained for treatment fidelity.

2.4. Materials

2.4.1. Demographics—A parental demographic questionnaire was designed to assess child, caregiver, and family characteristics (e.g., caregiver's and child's age and ethnicity, family status, family income), which were identified in previous studies as potential predictors of treatment attrition and length, as well as other demographics (e.g., caregiver's and child's gender and ethnicity, educational status of the caregivers, medical and mental health history of the parents and the child). Participants' ethnicities were classified based on the main subethnicities in Taiwan: the Hoklo/Min-Nan (who comprise 70% of the population), the Hakka (who comprise 15% of the population), Mainlander (who comprise 13% of the population), Taiwanese Aborigines (who comprise 2% of the population), and “Other”, which included those known as “New Immigrants”. The Hoklo/Min-Nan and the Hakka are descendants of early immigrants from the adjacent Fujian (Hokkien) and Guangdong (Canton) province in mainland China who crossed the Taiwan Strait. The Mainlanders are Chinese immigrants who arrived in Taiwan around the late 1940s during the Chinese Civil War. Taiwanese Aborigines are the indigenous people of Taiwan and are culturally, genetically, and linguistically closely related to the ethnic groups of Maritime Southeast Asia and Oceania. The majority of New Immigrants have mothers or fathers who immigrated from Vietnam, Indonesia, Thailand, or the Philippines (or other countries) and inter-married with local Taiwanese (Copper, 2003; Department of Statistics, Ministry of the Interior, Taiwan, 2014; Hsiao, 2004). The data obtained from the demographic questionnaire were used to determine participant eligibility, describe the sample, and evaluate any pretreatment differences between those who completed treatment and those who dropped out.

2.4.2. Semi-structured intake interview—A semi-structured interview was conducted with families to determine the major presenting concerns, developmental, social, academic, psychological, and medical histories, and parenting strategies being used in the home. The interview was used in conjunction with the demographics form to determine participant eligibility.

2.4.3. Child Behavior Checklist, ages 1.5–5 (CBCL 1.5–5) and ages 6–18 (CBCL 6–18)—The CBCL 1.5–5 and CBCL 6–18 are caregiver rating scales designed to screen for emotional and behavioral problems in youth aged 1.5 to 5 and 6 to 18 over the previous six months. Although three domains are obtained from the measure, only the Syndrome Scale, which has good psychometric properties, was used in the present study. The Syndrome Scale yields a Total Problem score and two broadband scores (Internalizing and Externalizing

Problem scores). Items are rated on a 3-point scale (0 = *not true*, 1 = *sometimes true*, and 2 = *very true or often true*; Achenbach & Rescorla, 2001). Multicultural norms, including normative samples from Taiwan and other societies, and cutoff scores have been established for the measure (Achenbach & Rescorla, 2007, 2010; Chen, Huang, & Chao, 2009). The internal consistency (αs ranging from .55 to .90 for the CBCL 6–18; αs ranging from .62 to .95 for the CBCL 1.5–5), test–retest reliability (*r*s ranging from .51 to .74 for the CBCL 6–18 one-month interval and .52 to .84 for the CBCL 1.5–5), interparental agreement (.25 to .84 for the CBCL 1.5–5), and construct validity (eight-factor structure for the CBCL 6–18; seven-factor structure for the CBCL 1.5–5) have been demonstrated (Yang et al., 2000; Wu et al., 2012). For the purpose of this study, an Externalizing T-score equal to or greater than 64 was used as an indicator of significant child externalizing behavior problems.

2.4.4. Eyberg Child Behavior Inventory (ECBI)—The ECBI is a 36-item parent-report measure of disruptive behavior problems in children ages 2–16 years. Parents indicate how often each behavior currently occurs on a 7-point Intensity scale (1 = *never*; 7 = *always*), and whether or not the behavior is a problem on a Yes/No Problem scale. Scores are summed to obtain an Intensity score that reflects the frequency of different disruptive behaviors as well as a Problem score that reflects the number of disruptive behaviors the parents rate as problematic for them at home (Eyberg & Pincus, 1999). The internal consistency, stability, and discriminative and predictive validity of both scales are respectable, while clinical cutoff scores of 131–133 and 15 for the Intensity and Problem scales, respectively, have been established (Eyberg & Pincus, 1999; Hood & Eyberg, 2003). Good internal consistency was found for the Chinese translation of the ECBI, Cronbach's αs = .94 and .91 for the ECBI Intensity and Problem scales, respectively. Adequate convergent validity was also found between the Externalizing, Internalizing, and Total Problem scales of the CBCL 1.5–5/6–18 and the Intensity scale of the ECBI ($r = .68$, $p < .01$, $r = .48$, $p < .01$, $r = .66$, $p < .01$, respectively) and between the Externalizing, Internalizing, and Total Problem scales of the CBCL 1.5–5/6–18 and the Problem scale of the ECBI ($r = .34$, $p < .05$, $r = .33$, $p < .05$, $r = .42$, $p < .01$, respectively). Although no data exist on appropriate cutoff scores on the ECBI for a Taiwanese population, Leung et al. (2009) found that the cutoff scores for a Hong Kong population were similar to those established for US populations. Thus, published cutoff scores were used to determine whether child participants displayed clinically significant disruptive behavior problems.

2.4.5. Personality Assessment Screener (PAS)—The PAS (Morey, 1997) is a 22-item self-report measure developed with reference to its parent instrument, the Personality Assessment Inventory (PAI; Morey, 1991), to rapidly screen for a wide range of clinical issues for individuals aged 18 years or older. The items on the PAS tap 10 domains of clinical problems: (a) Negative Affect, (b) Acting Out, (c) Health Problems, (d) Psychotic Features, (e) Social Withdrawal, (f) Hostile Control, (g) Suicidal Thinking, (h) Alienation, (i) Alcohol Problem, and (j) Anger Control. Each item score ranges from 0 to 3. A Chinese version of the PAS was developed and evaluated in a sample of Taiwanese college students (Chen, Lin, & Fortson, 2011) and an adult community sample (Cheng, 2014). Good test-retest reliability ($r = .81$ for the entire scale; range from $r = .51$ to $r = .81$ for the subscales), internal consistency (Cronbach's alpha = .66 for the entire scale; range from −.08 to .78 for

the subscales), and convergent and predictive validity were found. The same cutoff total score of 19 found in research in the US (Morey, 1997) was found in the adult community sample in Taiwan (Cheng, 2014). Thus, a total cutoff score of 19 or above on the Chinese version of the PAS was utilized as an indicator of parents' psychopathological personality.

2.4.6. Beck Anxiety Inventory (BAI)—The BAI is a 21-item measure used to assess the severity of anxiety in adults and adolescents. Anxiety symptoms are rated on a 4-point scale ranging from 0 (*not at all*) to 3 (*severely*), with total scores ranging from 0 to 63. The cut-off points for the total BAI score are as follows: 0–7 indicates minimal anxiety, 8–15 indicates mild anxiety, 16–25 indicates moderate anxiety and 26–63 indicates severe anxiety (Beck & Steer, 1993). The Chinese version of the BAI (Lin, 2000) has good internal consistency (Cronbach's α = .95, Guttman split-half coefficient = 0.91) and construct validity (two-factor structure: subjective anxiety and panic–somatic symptoms). A cut-off point (13/14) for discriminating between anxious and non-anxious individuals was established using a sample of 230 psychiatric outpatients and 112 individuals from the community (Che, Lu, Chen, Chang, & Lee, 2006). Convergent validity (r = 0.72) with the Hamilton Anxiety Rating Scale (Maier, Buller, Philipp, & Heuser, 1988) was found in the psychiatric outpatient sample (Che et al., 2006). For the purpose of the present study, the total score on the Chinese version of the BAI was utilized as an indicator of parents' anxiety symptoms.

2.4.7. Beck Depression Inventory-II (BDI-II)—The BDI-II (Beck, Steer, & Brown, 1996) is a 21-item self-report measure developed for the assessment of depressive symptoms in adults and adolescents 13 years and older. A value of 0 to 3 is assigned for each item, with total scores ranging from 0 to 63. A Chinese version of the BDI-II has been developed (Chen, 2000). Good internal consistency (Cronbach's α = .94, Guttman split-half coefficient = 0.91), construct validity (two-factor structure: cognitive-affective and somatic symptoms), and cut-off points (minimal depression = 0–16, mild depression = 17–22, moderate depression = 23–30, and severe depression = 31–63) were established using 180 psychiatric outpatients (Lu, Che, Chang, & Shen, 2002). For the purpose of the present study, the total score on the Chinese version of the BDI-II was utilized as an indicator of parents' depressive symptoms.

2.4.8. Parenting Stress Inventory (PSI)—The PSI (Abidin, 1995) is a 101-item parent-report measure designed to assess parental stress. The PSI can be used with parents whose children are 12 years of age or younger. Items on the PSI are rated on a five-point scale (1 = *strongly disagree* to 5 = *strongly agree*). The PSI yields a Total Stress score, a Child Domain score, and a Parent Domain score. The child domain measures child qualities that lead to frustration in fulfilling the parental role. The parent domain reflects the parents' view of their own functioning as a significant stressor in the parenting role. An optional Life Stress scale composed of 19 items in the yes/no format is also provided. A Chinese version of the PSI was developed by Weng (2003). Two items (items 5, 9) in the Child Domain and three items (items 59, 60, and 66) in the Parent Domain that had correlations lower than .30 were deleted as a result of item analyses. The measure's internal consistency (Cronbach's α = .91 for the Child and Parent Domain scales), construct validity (six-factor structure for the Child Domain scale; seven-factor structure for the Parent Domain scale), and norms have

been established (Weng, 2003). Based on past research in Chinese populations, a cutoff score equal to or greater than 62 for the Total Stress, Child Domain, and Parent Domain, and a cutoff score of 17 for Life Stress were used to identify caregivers currently experiencing parenting and life stress.

2.4.9. Dyadic Parent–Child Interaction Coding System-III (DPICS-III)—The DPICS (Eyberg et al., 2010; Eyberg, Nelson, Ginn, Bhuiyan, & Boggs, 2013) is an analogue behavioral observation system developed to assess the quality of parent–child social interactions. Caregiver–child behaviors were coded using three 5-minute standard situations (child-led play [CLP], parent-led play [PLP], clean-up [CU]) that varied in the degree of parental control required. Nine behaviors were coded for the present study during the 5-minute child-led play situation: Negative Talk (NTA), Direct Command (DC), Indirect Command (IC), Question (QU), Labeled Praise (LP), Unlabeled Praise (UP), Reflection (RF), Behavior Description (BD), and Neutral Talk (TA). To evaluate changes in caregivers' positive and negative talk during parent–child interactions, the frequency of several parent behaviors were combined to create two categories: “Do Skills” and “Don't Skills.” LP, RF, and BD were summed to form “Do Skills”, while NTA, DC, IC, and QU were summed to form “Don't Skills”. Child responses (i.e., No Opportunity to Comply [NOC], Comply [CO], and Noncomply [NC]) to parental commands (i.e., DC and/or IC) during the 5-minute parent-led play and clean-up situations were coded. To evaluate changes in children's compliance with parents' commands, a child compliance ratio (CCR) was created. The CCR is equal to total child compliance (CO) divided by the total number of parental direct and indirect commands (i.e., DC + IC).

Three of the predictors of treatment success in previous studies (i.e., total praise, direct command ratio, and negative talk; Fernandez & Eyberg, 2009; Werba et al., 2006) were examined. Total Praise (TP), which referred to positive parental talk during caregiver–child interactions, was calculated by adding all labeled and unlabeled praises (TP = UP + LP). The Direct Command Ratio, which referred to parental demandingness during caregiver–child interactions, was equal to the number of direct commands divided by the sum of all commands (DCR = DC / DC + IC). Negative talk during caregiver–child interactions was summed to form the total NTA. The psychometric properties of the DPICS-III for the nine parent verbalizations and three child responses to parent commands were established by Chen, Tseng, and Fortson (2013) in a clinically referred Taiwanese sample. For the nine parent verbalizations, percent agreement ranged from 94.3% (TA) to 99.4% (BD), while kappa reliabilities ranged from .70 (IC) to .91 (QU). For the three child responses to parent commands, percent agreement ranged from 92.5% (NOC) to 96.9% (NC), while kappa reliabilities ranged from .67 (CO) to .73 (NOC).

2.5. Data analysis

2.5.1. Demographic data—Descriptive statistics (e.g., means and frequencies) were calculated to describe the sample (e.g., demographic characteristics) and the variables previously found to predict attrition in PCIT. Chi-square and one sample t-tests were conducted to examine differences on demographic variables and predictors of treatment attrition and length for those who dropped out of treatment and those who completed

treatment. Because 13 independent t-tests were performed simultaneously, a Bonferroni-adjusted significance level of 0.00385 was used to reduce the possibility of Type I error (Bland & Altman, 1995).

2.5.2. Treatment attrition—To examine the predictors of treatment attrition, the variables that were significant in group comparisons (i.e., via the Chi-square analyses and *t*-tests) were included in the discriminant function analysis with group category (*dropouts* = 1; *completers* = 0) as the criterion variable. The predictors included (a) caregiver's gender (*male* = 1; *female* = 0), (b) education (*illiterate* = 0, *primary school* = 1, *middle school* = 2, *high school* = 3, *junior college* = 4, *university* = 5, *master's* = 6, *doctorate/medical degree* = 7), (c) maladaptive personality characteristics (assessed by the PAS total scores), (d) depressive symptoms (assessed by the BDI-II total scores), (e) anxiety symptoms (assessed by the BAI total scores), (f) family status (*two-parent family* = 0, *one-parent family* = 1, *two foster-parent family* = 2), and (g) family income (*low* = 0, *middle* = 1, *high* = 2). All caregivers who completed treatment attended the 3-month follow-up assessment session; thus, there was no follow-up attrition, and as such, no variables were identified to predict attrition at follow-up.

2.5.3. Treatment length—To aid in the identification of predictors of treatment length, bivariate correlations were calculated between the potential variables predicting PCIT dropout (see Table 1) and the total number of treatment sessions completed. Child and caregiver race were coded as dummy variables (1 = *minority*; 0 = *nonminority*) to calculate bivariate correlations. After identifying significant correlations, a stepwise, multiple regression analysis was conducted to predict treatment length.

2.5.4. Treatment effects—Repeated-measures analyses of variance (ANOVAs) were conducted to evaluate the effects of Time (at pre-treatment, post-treatment, and 3-month follow-up) for the following outcome variables: (a) child's externalizing and disruptive behaviors rated by caregivers, (b) caregivers' reports of parenting stress, (c) caregivers' use of PCIT Do and Don't skills during the child-led play situation, and (d) child compliance during parent-led play and clean-up situations. Single group effect sizes, from pre-treatment to post-treatment and from pre-treatment to 3-month follow-up, were calculated using the formula employed in Thomas and Zimmer-Gembeck's (2007) meta-analysis of PCIT trials: $d = (M_{post} - M_{pre}) / SD_{pre}$, where d was the correct single group effect size, M_{post} was the mean value at post-treatment or at follow-up, M_{pre} was the mean value at pre-treatment, and SD_{pre} was the standard deviation at pre-treatment.

To evaluate whether the changes in children's behavior problems from pre-treatment to post-treatment and from pre-treatment to 3-month follow-up were clinically significant, two criteria were used: (a) the magnitude of the changes had to be statistically reliable, *and* (b) the child's post-treatment or follow-up score had to fall within a range that is indistinguishable from the norm (Jacobson, Roberts, Berns, & McGlinchey, 1999). For the first criterion, the reliable change index (RCI; Jacobson, Follette, & Revenstorf, 1984) was used to determine whether the magnitude of the change was statistically reliable (i.e., it exceeded the margin of measurement error). The RCI is calculated by dividing the magnitude of change between pre-treatment and post-treatment scores or pre-treatment and

follow-up scores for each child by the standard error of the difference score. If a RCI value is greater than 1.96, the magnitude of the change is considered statistically reliable (Jacobson et al., 1999). For the second criterion, the child's pre-treatment score had to be at or above the published cutoff value (Bagner & Eyberg, 2007), while the post-treatment or follow-up score was below the published cutoff value (Bagner & Eyberg, 2007; Jacobson et al., 1999).

3. Results

3.1. Demographic data

When comparing the child, parent, and family characteristics of treatment completers and treatment dropouts, significant differences were observed for caregiver's gender, education, family status and psychological problems/disorders. Compared to caregivers who completed treatment, caregivers who dropped out of treatment were more likely to be female (100% vs. 71.9%), $\chi^2(1, N = 44) = 4.24$, $p < .05$, and to have completed high school or less (75% vs. 18.8%), $\chi^2(6, N = 44) = 15.39$, $p < .05$. Moreover, compared to those who completed treatment, the caregivers who dropped out of treatment were more likely to be single- and foster-parent families (75% vs. 21.9%), $\chi^2(2, N = 44) = 12.32$, $p < .01$, and have a low family income (41.7% vs. 6.3%), $\chi^2(2, N = 44) = 10.66$, $p < .01$. Although child's gender, $\chi^2(1, N = 44) = 3.71$, $p = .054$, approached significance, no other significant group differences were found for child, parent, and family characteristics. Additional information on child, parent, and family characteristics for the overall sample and among treatment completers and dropouts are presented in Table 1.

At pretreatment, the caregivers who dropped out of treatment reported significantly more psychological problems/disorders diagnosed by mental health professionals, $\chi^2(1, N = 44) = 9.24$, $p < .01$, maladaptive personality characteristics, $t(42) = 3.94$, $p < 0.00385$, and depressive symptoms, $t(42) = 2.12$, $p < 0.00385$, than those who completed treatment. Parents from both groups (those who dropped out vs those who completed treatment) at pre-treatment reported similar levels of anxiety symptoms and stress related to parenting and life in general, engaged in similar levels of positive and negative talk, and gave similar numbers of commands. Moreover, children from both groups (those whose families dropped out vs those whose families completed treatment) exhibited similar levels of behavior problems as reported on the CBCL and ECBI at pre-treatment (see Table 1).

3.2. Treatment attrition

To determine which variables were predictive of treatment attrition, a cutoff value of .30 was used for the standardized canonical discriminant function coefficients (Afifi & Clark, 1996). The discriminant function was significant, Wilks's lambda, $\Lambda = .51$, $\chi^2(7, n = 44) = 25.85$, $p < .01$. Caregivers who had maladaptive personalities, children who did not live in a two-parent family, and caregivers who had a lower level of education (coefficients = .62, .54, and −.40, respectively) at pre-treatment were particularly vulnerable to dropping out of treatment. In terms of accuracy of predicting group membership, 83.36% (38 out of 44) of the parent–child dyads in this study were classified correctly using the seven identified variables (kappa coefficient = .67, $p < .01$).

3.3. Treatment length

Child's minority status (r = .54, p < .01), CBCL Externalizing Problem Scale scores (r = .45, p = .01), the DPICS direct command ratio (r = .55, p < .01), and DPICS total negative talk (r = .44, p < .05) were significantly correlated with the total number of treatment sessions completed. Using these four variables as potential predictors, the regression equation was significant, R^2 = .57, adjusted R^2 = .52, $F(3, 28)$ = 12.31 and p < .01. Increased length of treatment was predicted by child minority status (standardized coefficient beta = .47, p < .01), higher DPICS total negative talk (beta = .34, p < .05), and higher DPICS direct command ratio (beta = .30, p < .05).

3.4. Treatment effects

A time main effect was noted on all outcome variables in the repeated measures ANOVAs (see Table 2). Post-hoc comparisons were conducted following significant time main effects for all variables. All outcome variables improved at post-treatment and maintained at 3-month follow-up when compared to their values at pre-treatment (p < .001), with large effect sizes ($d \geq .92$; see Table 2).

3.5. Clinical significance

As shown in Table 3, relatively high percentages (range = 80%–86.4%) of caregivers who completed treatment reported clinically significant changes in the child's behavior problems at post-treatment. In general, treatment effects appeared to diminish over time. The one exception was for caregivers' perception of the child's behavior as a problem (see Table 3).

4. Discussion

This study on the use of PCIT with Taiwanese children with disruptive behavior problems and their caregivers had two main goals. The first goal was to explore predictors that contribute to treatment attrition and length in PCIT for these Taiwanese families. The second goal was to examine the treatment effects of PCIT in a Taiwanese sample. Several factors were found to predict treatment attrition and length and were consistent with those identified as predictors in US samples (Fernandez & Eyberg, 2009; Werba et al., 2006). Moreover, Taiwanese families appeared to benefit from standard PCIT, with minor cultural tailoring. Additional information on factors that predict treatment attrition and length are described below, along with details on the overall effects of PCIT with Taiwanese families.

4.1. Treatment attrition

The overall rate of attrition (27.27%) found in the present study was comparable to that observed in many previous studies (e.g., 26.92% in Eyberg, Boggs, & Aligina, 1995; 23% in Nixon et al., 2003; 34% in Werba et al., 2006). Group differences between those who dropped out of treatment and those who completed treatment were found for several variables: caregiver's gender, education, psychopathology (maladaptive personality, depressive symptoms), family status, and family income. These findings emerged even after considering that the average number of treatment sessions attended for those who dropped out of treatment was 14. Of the variables predicting attrition, caregivers' maladaptive personality characteristics was the best predictor. Being a single parent or foster parent and

low levels of caregiver education were also highly predictive of attrition. These findings are consistent with previous research (e.g., Werba et al., 2006). The presence of multiple psychological issues and being a single or foster parent may make it more difficult for these families to regularly attend therapy sessions and to practice play and parenting skills at home, thereby leading to dropout from treatment. These families may need other supports before beginning treatment. For example, parents with psychological issues may need to have those addressed before beginning parent training, while single or foster parents may need economic or other support to effectively engage in treatment.

Another predictor of attrition was caregiver education. The majority (81.2%) of caregivers who completed treatment had a college or higher degree, whereas the majority (75%) of those who failed to complete treatment had a high school or lower degree. Lower levels of education often accompany other life stressors such as lack of sufficient resources to support a family, which, when coupled with the demands of the program may have led to treatment dropout. Other research has noted that the demands of parent training programs is often a factor linked to attrition (Kazdin, Holland, Crowley, & Breton, 1997). For some families, it may be helpful to incorporate problem solving skills training as a way to assist in effectively managing and increasing self-efficacy in handling the varied stressful life demands to which one is exposed.

4.2. Treatment length

For the current study, the total number of sessions required to complete treatment ranged from 14 to 41 sessions, with a mean of 25.44 sessions. Previous research with US samples found that treatment lasted between 10 and 16 sessions with a 12.6 session average (Gallagher, 2003; Herschell et al., 2002). Other research on the use of PCIT with families of different cultures (Leung et al., 2009; McCabe & Yeh, 2009; Matos et al., 2006) also documented that additional time was necessary to successfully complete treatment, especially when family and other life stressors were present. There were a number of factors that likely contributed to treatment length in the current study. Many of these issues dissipated over the course of treatment but impacted treatment length nonetheless. For example, additional time was needed for check-in and to converse with caregivers, to engage in social interactions, and to address the caregiver's stressors unrelated to the child's behavior. In addition, although parents were referred for treatment or sought treatment themselves related to their child's behaviors, many were still in denial about the degree of impairment of their child's behaviors and were unwilling to accept that the skills being taught would be helpful in changing their child's behavior. Caregivers also often had unrealistic expectations or demands for the child during the parent–child interactions, as they often made requests that were clearly beyond or below the child's ability level. Similar to the findings in Chinese parents in Hong Kong (Leung et al., 2009), parents also had a difficult time ignoring minor child misbehavior and praising the opposite positive child behavior. Parents also had difficulty actually playing with the child (i.e., lack of play skills, being over-directive/over-controlling), as parent–child play is not as common in the Taiwan culture as it may be in other cultures (Lieh-Mak, Lee, & Luk, 1984). The difficulties observed in play often hindered treatment progress and required more coaching by the therapist.

The top three predictors in the current study for treatment length included child minority status, parental demandingness during caregiver–child interactions, and negative talk during caregiver–child interactions. Minority children have parents who come from a different country and/or are from a different subcultural background. These children and their parents may have higher levels of life stress associated with lower levels of social support and a lower socioeconomic background as a direct result of their minority status. They also may have more psychosocial dysfunction resulting from their process of acculturation (the process of second-culture learning; Sam & Berry, 2010) and enculturation (the process of first-culture learning; Grusec & Hastings, 2007). This may lead to high case difficulty and complexity for therapists and require more time to successfully complete treatment. This is consistent with prior research which has suggested that minority children and their families are more likely to drop out of parent training even when other variables (e.g., socioeconomic status, demographic characteristics) were controlled (Kazdin, Stolar, & Marciano, 1995). Capage et al. (2001), however, did not find group differences between African American and Caucasian families in the length of participation in PCIT after matching for age, gender, income, and treatment location. Therefore, more research is needed to clarify whether race, culture, or another factor associated with race has an effect on treatment length and whether its impact is varied by types of behavioral parent-training programs or societies/countries.

The results of the present study also support previous research which found that maternal negative talk or inappropriate behavior (e.g., criticism, sarcasm, smart talk; Fernandez & Eyberg, 2009; Werba et al., 2006) during parent–child interactions is a salient indicator of longer treatment sessions. Demandingness, which was a predictor of treatment dropout in the study by Werba et al. (2006), was found to predict treatment length in the current study. As with most adults, the behavior of the caregivers is engrained and the Taiwanese culture is supportive of more demanding parenting (Jose, Huntsinger, Huntsinger, & Liaw, 2000). Thus, the number of sessions required to complete treatment and convince caregivers that more responsive and nurturing caregiving is effective was increased. This could have led to the attrition rates noted in the current study, as increased length of any program is often associated with fewer completions and may need to be considered in future implementation efforts (Kazdin, 2005).

4.3. Treatment effects

The findings of the current study are consistent with previous findings in US populations wherein PCIT leads to increases in positive parenting behaviors (e.g., praise, reflective listening) and child compliance, as well as decreases in negative parenting behaviors (e.g., criticism, sarcasm), parental stress, and child disruptive or externalizing behavior problems (Bagner & Eyberg, 2007; Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993; Eyberg et al., 2001; Goldfine, Wagner, Branstetter, & McNeil, 2008; Kaminski, Valle, Filene, & Boyle, 2008). Statistically reliable group mean changes on these outcome variables were observed for those who completed treatment, and the treatment gains were maintained at the three-month follow-up. Thus, PCIT appears to be a viable treatment for Taiwanese families whose children have disruptive behavior or conduct problems.

Clinically significant changes on children's behavior problems were also noted among the majority of the families who completed treatment. Over half (55%) of families who completed treatment maintained the improvement on the child's behavior problems at the three-month follow-up. The general pattern in these results is similar to that obtained by Bagner and Eyberg (2007) wherein a larger percentage of the primary caregivers in the treated group (compared to the untreated group) reported clinically significant changes on the CBCL Externalizing Problem Scale and the ECBI Intensity Scale scores at post-treatment.

One of the factors that was not found to predict treatment outcome in the current study was the age of the child. PCIT was developed for children between the ages of 2 and 7 (Eyberg & Funderburk, 2011; McNeil & Hembree-Kigin, 2010). PCIT has been used with children up to the age of 12 in past research (Chaffin et al., 2004; Galanter et al., 2012). The age range of the current study was broad (3 to 11), and outcomes were consistent for families with children at each of the various ages. Although PCIT may not be appropriate for all children over the age of 7, this suggests that it might be helpful for some families if the child's level of emotional (e.g., interest in play with the parent and response to the parent's attention) and physical (e.g., size) development are carefully considered, as well as the pros and cons of PCIT or other treatment options.

4.4. Strengths of the program

The present study is the first of its kind to examine treatment attrition and length and overall effects of PCIT in a sample of Taiwanese families. The preliminary findings suggest that PCIT is a promising intervention for this population. The factors predicting attrition and treatment length allow for a more thorough understanding of the factors affecting PCIT treatment outcome. The findings can be used to ensure that additional supports are provided, as needed, for those likely to drop out of treatment.

As is repeated in the literature, reports from parents do not always correspond with ratings from independent observers and can be influenced by social desirability bias (Morsbach & Prinz, 2006). Thus, a second strength of the present study was the inclusion of behavioral measures to assess treatment effects. Behavioral measures can be used along with the self-report measures to ensure a true picture of the clinical case presentation (Groth-Marnat, 2009). A third strength was the analysis of statistically and clinically significant changes in the child's behavior problems. In addition to the statistically reliable changes with group means and effect sizes, clinically significant changes in children's behavior were assessed as a way to evaluate treatment effects. A final strength of the study was that it included a follow-up evaluation of the children to determine whether the effects were maintained after three months, and there was 100% retention at follow-up. There are several possible explanations that might account for the 100% retention rate. For example, the sample size was very small. It is possible that a larger sample size would have not resulted in 100% participation in the follow-up assessment. In addition, the PCIT team had good rapport with families, and the families noticed changes in their children's behavior and were appreciative. Because of this, the families wanted to come back for the follow-up assessment. In Chinese culture, it is also not unusual to have respect for and deference to authority (Wong & Piran,

1995). The primary therapist was considered an “authority figure” to families and that respect may also have contributed to the participation in the follow-up assessment.

4.5. Limitations

There are several limitations to the present study. First, the small sample size may have affected the power to examine treatment effects and to predict treatment dropout and success in PCIT. Second, the generalizability may be limited by the small sample size, the convenience sampling, the fact that a single lead therapist provided treatment to all families, the large number of minorities in the study in general, and the recruitment locations, which were primarily in northern and southern Taiwan. Third, spontaneous improvement, regression toward the mean or measurement artifact cannot be ruled out as explanations for improvement over time due to lack of a no-treatment comparison condition. Nonetheless, it is more likely that the improvements were to some extent the result of the intervention rather than simply the passage of time due to the large effect sizes observed and the high percentage of treatment completers who also reported clinically significant changes in child behavior problems.

4.6. Future directions

It is important to replicate the present study with a larger clinical sample size, to include a no-treatment comparison condition for an empirical evaluation of efficacy, and to examine long-term effects and sustainability. The proportion of the sample who completed treatment was not representative of the make-up of the various ethnicities in the Taiwan community. Therefore, it may be helpful for future research to compare the effects of PCIT in minority subgroups with the effects obtained from the cultural majority.

Parenting values/beliefs and practices are highly likely to be influenced by culture (Harkness & Super, 2006). To maintain Taiwanese parent–child dyads in treatment and to shorten treatment length, future studies may examine Taiwanese caregivers' parenting values/beliefs and practices and systematically evaluate Taiwanese caregivers' perceptions of the difficulties of participating in PCIT and their relationship with the therapist. The information may be useful in culturally tailoring PCIT and to further examine its treatment efficacy.

References

Abidin, RR. Parenting Stress Index: Professional manual. Psychological Assessment Resources; Odessa, FL: 1995.

Abrahamse ME, Junger M, Chavannes EL, Coelman FJG, Boer F, Lindauer RJL. Parent-Child Interaction Therapy for preschool children with disruptive behaviour problems in The Netherlands. Child and Adolescent Psychiatry and Mental Health. 2012; 6(24):1–9. http://dx.doi.org/10.1186/1753-2000-6-24. [PubMed: 22216948]

Achenbach, TM.; Rescorla, LA. Manual for the ASEBA school-age forms and profiles. University of Vermont, Research Center for Children, Youth, & Families; Burlington, VT: 2001.

Achenbach, TM.; Rescorla, LA. Multicultural supplement to the manual for the ASEBA school-age forms and profiles. University of Vermont, Research Center for Children, Youth, & Families; Burlington, VT: 2007.

Achenbach, TM.; Rescorla, LA. Multicultural supplement to the manual for the ASEBA preschool forms and profiles. University of Vermont Research Center for Children, Youth, & Families; Burlington, VT: 2010.

Afifi, AA.; Clark, V. Computer-aided multivariate analysis. Chapman & Hall; London: 1996.

Bagner DM. Father's role in parent training for children with developmental delay. Journal of Family Psychology. 2013; 27(4):650–657. http://dx.doi.org/10.1037/a0033465. [PubMed: 23772849]

Bagner DM, Eyberg SM. Parent-Child Interaction Therapy for disruptive behavior in children with mental retardation: A randomized controlled trial. Journal of Clinical Child and Adolescent Psychology. 2007; 36(3):418–429. http://dx.doi.org/10.1080/15374410701448448. [PubMed: 17658985]

Beck, AT.; Steer, RA. Manual for the Beck Anxiety Inventory. The Psychological Corporation; San Antonio, TX: 1993.

Beck, AT.; Steer, RA.; Brown, GK. Manual for the Beck Depression Inventory—Second edition (BDI-II). The Psychological Corporation; San Antonio, TX: 1996.

Bland JM, Altman DG. Multiple significance tests: The Bonferroni method. British Medical Journal. 1995; 310:170. http://dx.doi.org/10.1136/bmj.310.6973.170. [PubMed: 7833759]

Boggs SR, Eyberg SM, Edwards DL, Rayfield A, Jacobs J, Bagner D, Hood KK. Outcomes of Parent-Child Interaction Therapy: A comparison of treatment completers and study dropouts one to three years later. Child & Family Behavior Therapy. 2004; 26:1–22. http://dx.doi.org/10.1300/J019v26n04_01.

Capage LC, Bennett GM, McNeil CB. A comparison between African American and Caucasian children referred for treatment of disruptive behavior disorders. Child & Family Behavior Therapy. 2001; 23(1):1–14. http://dx.doi.org/10.1300/J019v23n01_01.

Chaffin M, Silovsky JF, Funderburk B, Valle LA, Brestan EV, Balachova T, Bonner BL. Parent-Child Interaction Therapy with physically abusive parents: Efficacy for reducing future abuse reports. Journal of Consulting and Clinical Psychology. 2004; 72(3):500–510. http://dx.doi.org/10.1037/0022-006X.72.3.500. [PubMed: 15279533]

Chambless DL, Ollendick TH. Empirically supported psychological interventions: Controversies and evidence. Annual Review of Psychology. 2001; 52:685–716. http://dx.doi.org/10.1146/annurev.psych.52.1.685.

Che H, Lu M, Chen H, Chang S, Lee Y. Validation of the Chinese version of the Beck Anxiety Inventory. Formosan Journal of Medicine. 2006; 10(4):447–454. .

Chen, H. Beck Depression Inventory-II manual. Chinese Behavioral Science Corporation; Taipei, Taiwan: 2000. 貝克憂鬱量表第二版(中文版)指導手冊

Chen, Y.; Huang, HL.; Chao, CC. Achenbach System of Empirically Based Assessment (ASEBA). Psychological Publishing; Taipei, Taiwan: 2009. 阿肯巴克實證衡鑑系統

Chen, Y.; Lin, K.; Fortson, BL. Psychometric properties of the Chinese Personality Assessment Screener in a sample of Taiwanese college students. Poster presented at the 45th annual convention of the Association for Behavioral and Cognitive Therapies; Toronto: Ontario, CA. Nov. 2011

Chen, Y.; Tseng, K.; Fortson, BL. Psychometric properties of the Dyadic Parent–Child Interaction Coding System in a clinically referred Taiwanese sample. Poster presented at the Parent-Child Interaction Therapy International Convention; Boston, MA, USA. 2013.

Cheng, X. Psychometric properties of the Chinese version of Personality Assessment Screener in an adult community sample in Taiwan] (Unpublished master's thesis). National Chung Cheng Univeristy; Chia-Yi, Taiwan: 2014. 性格評估篩檢量表-中文版信效度之建立: 以台灣社區成人樣本為例

Copper, J. Taiwan: Nation, state, or province?. 4th. Westview Press; Boulder, CO: 2003.

Department of Statistics, Ministry of the Interior, Taiwan. Statistical year book of Interior: Acquirement of the R.O.C. nationality. 2014. Retrieved from http://sowf.moi.gov.tw/stat/year/elist.htm

Dishion, TJ.; French, DC.; Patterson, GR. The development and ecology of antisocial behavior. Developmental psychopathology. In: Cicchetti, D.; Cohen, DJ., editors. Risk disorder and adaptation. Vol. 2. Wiley; New York: 1995. p. 421-471.

Driskell JE, Willis RP, Copper C. Effects of overlearning on retention. Journal of Applied Psychology. 1992; 77:615–622.

Eisenstadt TH, Eyberg SM, McNeil CB, Newcomb K, Funderburk B. Parent-Child Interaction Therapy with behavior problem children: Relative effectiveness of two stages and overall treatment outcome. Journal of Clinical Child Psychology. 1993; 22(1):42–51.

Eyberg SM, Boggs SR, Aligina J. Parent-Child Interaction Therapy: A psychosocial model for the treatment of young children with conduct problem behavior and their families. Psychopharmacology Bulletin. 1995; 31(1):83–91. [PubMed: 7675994]

Eyberg, SM.; Funderburk, B. Parent-Child Interaction Therapy protocol. PCIT International; Gainesville, FL: 2011.

Eyberg SM, Funderburk BW, Hembree-Kigin TL, McNeil CB, Querido JG, Hood KK. Parent-Child Interaction Therapy with behavior problem children: One and two year maintenance of treatment effects in the family. Child & Family Behavioral Therapy. 2001; 23(4):1–20. http://dx.doi.org/10.1300/J019v23n04_01.

Eyberg SM, Nelson MM, Boggs SR. Evidence-based psychosocial treatments for children and adolescents with disruptive behavior. Journal of Clinical Child and Adolescent Psychology. 2008; 37(1):215–237. http://dx.doi.org/10.1080/15374410701820117. [PubMed: 18444059]

Eyberg, SM.; Nelson, MM.; Duke, M.; Boggs, SR. Manual for Dyadic Parent–Child Interaction Coding System (Draft 3.08). 3rd2010. Retrieved from http://www.pcit.org

Eyberg, SM.; Nelson, MM.; Ginn, NC.; Bhuiyan, N.; Boggs, SR. Dyadic Parent–Child Interaction Coding System (DPICS) comprehensive manual for research and training. 4th. PCIT International; Gainesville, FL: 2013.

Eyberg, SM.; Members of Child Study Laboratory. Parent–Child Interaction Therapy: Integrity checklists and session materials (Version 2.10). 2010. Retrieved from http://www.pcit.org

Eyberg, SM.; Pincus, D. Eyberg Child Behavior Inventory and Sutter–Eyberg Student Behavior Inventory: Professional manual. Psychological Assessment Resources; Odessa, FL: 1999.

Fernandez, MA.; Chase, RM.; Ingalls, CA.; Eyberg, SM. The abridged workbook coder training manual for the Dyadic Parent–Child Interaction Coding System (Draft 3.09). 3rd2010. Retrieved from http://www.pcit.org

Fernandez MA, Eyberg SM. Predicting treatment and follow-up attrition in Parent-Child Interaction Therapy. Journal of Abnormal Child Psychology. 2009; 37:431–441. http://dx.doi.org/10.1007/s10802-008-9281-1. [PubMed: 19096926]

Galanter R, Self-Brown S, Valente J, Dorsey S, Whitaker DJ, Bertuglia-Haley M, Prieto M. Effectiveness of Parent-Child Interaction Therapy delivered to atrisk families in the home setting. Child & Family Behavior Therapy. 2012; 34(3):177–196. http://dx.doi.org/10.1080/07317107.2012.707079.

Gallagher N. Effects of Parent-Child Interaction Therapy on young children with disruptive behavior disorders. Bridges: Practice-Based Research Syntheses. 2003; 1(4):1–17.

Goldfine ME, Wagner SM, Branstetter SA, McNeil CB. Parent-Child Interaction Therapy: An examination of cost-effectiveness. Journal of Early and Intensive Behavior Intervention. 2008; 5(1):119–141.

Groth-Marnat, G. Handbook of psychological assessment. 5th. John Wiley & Sons; New York: 2009.

Grusec, JE.; Hastings, PD. Handbook of socialization: Theory and research. Guilford Press; 2007.

Harkness, S.; Super, CM. Themes and variations: Parental ethnotheories in western cultures. In: Rubin, KH.; Chung, OB., editors. Parenting beliefs, behaviors, and parent–child relations: A cross-cultural perspective. Psychology Press; New York: 2006. p. 61-79.

Herschell AD, Calzada EJ, Eyberg SM, McNeil CB. Clinical issues in Parent-Child Interaction Therapy. Cognitive and Behavioral Practice. 2002; 9:16–27. http://dx.doi.org/10.1016/S1077-7229(02)80035-9.

Hood KK, Eyberg SM. Outcomes of Parent-Child Interaction Therapy: Mothers' reports on maintenance three to six years after treatment. Journal of Clinical Child and Adolescent Psychology. 2003; 32(3):419–429. http://dx.doi.org/10.1207/S15374424JCCP3203_10. [PubMed: 12881030]

Hsiao, A. Contemporary Taiwanese cultural nationalism. Routledge Press; London: 2004.

Jacobson NS, Follette WC, Revenstorf D. Psychotherapy outcome research: Methods for reporting variability and evaluating clinical significance. Behavior Therapy. 1984; 15(4):336–352. http://dx.doi.org/10.1016/S0005-7894(84)80002-7.

Jacobson N, Roberts L, Berns S, McGlinchey J. Methods for defining and determining the clinical significance of treatment effects: Description, application, and alternatives. Journal of Consulting and Clinical Psychology. 1999; 67(3):300–307. http://dx.doi.org/10.1037/0022-006X.67.3.300. [PubMed: 10369050]

Jose PE, Huntsinger CS, Huntsinger PR, Liaw F. Parental values and practices relevant to young children's social development in Taiwan and the United States. Journal of Cross-Cultural Psychology. 2000; 31(6):677–702. http://dx.doi.org/10.1177/0022022100031006002.

Kaminski JW, Valle LA, Filene JH, Boyle CL. A meta-analytic review of components associated with parent training program effectiveness. Journal of Abnormal Child Psychology. 2008; 36:567–589. http://dx.doi.org/10.1007/s10802-007-9201-9. [PubMed: 18205039]

Kazdin, AE. Parent management training: Treatment for oppositional, aggressive, and antisocial behavior in children and adolescents. Oxford University Press; New York: 2005.

Kazdin AE, Holland L, Crowley M, Breton S. Family experience of barriers to treatment and premature termination from child therapy. Journal of Consulting and Clinical Psychology. 1997; 65(3):453–463. http://dx.doi.org/10.1037/0022-006X.65.3.453. [PubMed: 9170769]

Kazdin AE, Stolar M, Marciano P. Risk factors for dropping out of treatment among White and Black families. Journal of Family Psychology. 1995; 9:402–417. http://dx.doi.org/10.1037/0893-3200.9.4.402.

Lanier P, Kohl PL, Benz J, Swinger D, Moussette P, Drake B. Parent-Child Interaction Therapy in a community setting: Examining outcomes, attrition, and treatment setting. Research on Social Work Practice. 2011; 21(6):689–698. http://dx.doi.org/10.1177/1049731511406551. [PubMed: 24839378]

Leung C, Tsang S, Heung K, Yiu I. Effectiveness of Parent–Child Interaction Therapy (PCIT) among Chinese families. Research on Social Work Practice. 2009; 19:304–313. http://dx.doi.org/10.1177/1049731508321713.

Leung C, Tsang S, Sin TCS, Choi S. The efficacy of Parent–Child Interaction Therapy with Chinese families: Randomized controlled trial. Research on Social Work Practice. 2015; 25:117–128. http://dx.doi.org/10.1177/1049731513519827.

Lieh-Mak F, Lee PWH, Luk SL. Problems encountered in teaching Chinese parents to be behavior therapists. Journal of Psychology in the Orient. 1984; 27(1):56–64.

Lin, YJ. Beck Anxiety Inventory. Chinese Behavioral Science Corporation; Taipei, Taiwan: 2000. 貝克焦慮量表(中文版) 指導手冊

Lu M, Che H, Chang S, Shen WW. Reliability and validity of the Chinese version of the Beck Depression Inventory-II. Taiwanese Journal of Psychiatry. 2002; 16(4):301–310. .

Maier W, Buller R, Philipp M, Heuser I. The Hamilton Anxiety Scale: Reliability, validity and sensitivity to change in anxiety and depressive disorders. Journal of Affect Disorder. 1988; 14(1): 61–68. http://dx.doi.org/10.1016/0165-0327(88)90072-9.

Matos M, Torres R, Santiago R, Jurado M, Rodriguez I. Adaptation of Parent–Child Interaction Therapy for Puerto Rican families: A preliminary study. Family Process. 2006; 45(2):205–222. http://dx.doi.org/10.1111/j.1545-5300.2006.00091.x. [PubMed: 16768019]

Maughan DR, Christiansen E, Jenson WR, Olympia D, Clark E. Behavioral parent training as a treatment for externalizing behaviors and disruptive behavior disorders: A meta-analysis. School Psychology Review. 2005; 34(3):267–286.

McCabe KM, Yeh M. Parent–Child Interaction Therapy for Mexican Americans: A randomized clinical trial. Journal of Clinical Child & Adolescent Psychology. 2009; 38(5):753–759. http://dx.doi.org/10.1080/15374410903103544. [PubMed: 20183659]

McNeil, CB.; Hembree-Kigin, TL. Parent–Child Interaction Therapy: Expanded clinical edition. Springer; New York: 2010.

Morey, LC. Personality Assessment Inventory: Professional manual. Psychological Assessment Resources; Odessa, FL: 1991.

Morey, LC. Personality Assessment Screener. Psychological Assessment Resources; Lutz, FL: 1997.

Morsbach SK, Prinz RJ. Understanding and improving the validity of self-report of parenting. Clinical Child and Family Review. 2006; 9:1–21. http://dx.doi.org/10.1007/s10567-006-0001-5.

Nixon RDV, Sweeney L, Erickson DB, Touyz SW. Parent–Child Interaction Therapy: A comparison of standard and abbreviated treatments for oppositional defiant preschoolers. Journal of Consulting and Clinical Psychology. 2003; 71(2):251–260. http://dx.doi.org/10.1037/0022-006X.71.2.251. [PubMed: 12699020]

Patterson GR, Stouthamer-Loeber M. The correlation of family management practices and delinquency. Child Development. 1984; 55:1299–1307. http://dx.doi.org/10.2307/1129999. [PubMed: 6488958]

Sam DL, Berry JW. Acculturation when individuals and groups of different cultural backgrounds meet. Perspectives on Psychological Science. 2010; 5(4):472–481. http://dx.doi.org/10.1177/1745691610373075. [PubMed: 26162193]

Thomas R, Zimmer-Gembeck MJ. Behavioral outcomes of Parent–Child Interaction Therapy and Triple P-Positive Parenting Program: A review and meta-analysis. Journal of Abnormal Child Psychology. 2007; 35:475–495. http://dx.doi.org/10.1007/s10802-007-9104-9. [PubMed: 17333363]

Thomas R, Zimmer-Gembeck MJ. Parent–Child Interaction Therapy: An evidence-based treatment for child maltreatment. Child Maltreatment. 2012; 17(3):253–266. http://dx.doi.org/10.1177/1077559512459555. [PubMed: 22942167]

Weng, YS. Parenting Stress Index Manual. Psychological Publishing; Taipei, Taiwan: 2003. 親職壓力量表指導手冊

Werba B, Eyberg SM, Boggs SR, Algina J. Predicting the outcome of Parent–Child Interaction Therapy: Success and attrition. Behavior Modification. 2006; 30(5):618–646. http://dx.doi.org/10.1177/0145445504272977. [PubMed: 16894233]

Wong OC, Piran N. Western biases and assumptions as impediments in counselling traditional Chinese clients. Canadian Journal of Counselling. 1995; 29(2):107–119.

Wu YT, Chen WJ, Hsieh WS, Chen PC, Liao HF, Su YN, Jeng SF. Maternal-reported behavioral and emotional problems in Taiwanese preschool children. Research in Developmental Disabilities. 2012; 33:866–873. http://dx.doi.org/10.1016/j.ridd.2011.11.018. [PubMed: 22236631]

Yang HJ, Soong WT, Chiang CN, Chen WJ. Competence and behavioral/emotional problems among Taiwanese adolescents as reported by parents and teachers. Journal of the American Academy of Child & Adolescent Psychiatry. 2000; 32:232–239. http://dx.doi.org/10.1097/00004583-200002000-0002. [PubMed: 10673835]

Table 1

Pre-treatment characteristics of treatment completers versus treatment dropouts.

	Overall sample (*n* = 44)		Treatment completers (*n* = 32)		Treatment dropouts (*n* = 12)	
	***M* (*SD*)**	**%(*n*)**	***M* (*SD*)**	**%(*n*)**	***M* (*SD*)**	**%(*n*)**
Child demographic variables						
Child's age	6.73 (1.82)		6.72 (1.76)		6.75 (2.05)	
Child's gender						
Girl		43.2% (19)		34.4% (11)		66.7% (8)
Boy		56.8% (25)		65.6% (21)		33.3% (4)
Child's race						
Min Nan/Taiwanese		84.1% (40)		87.5% (31)		75% (9)
Mixed ethnicities		15.9% (2)		12.5% (1)		25% (3)
Caregiver demographic variables						
Caregiver's age	39.32 (7.56)		39.50 (7.97)		38.83 (6.63)	
Caregiver's gender*						
Females (including mothers, grandmothers, aunts, and foster mothers)		79.5% (35)		71.9% (23)		100% (12)
Males (including fathers only)		20.5% (9)		28.1% (9)		0% (0)
Relationship to child						
Mother		68.2% (30)		59.4% (19)		91.7% (11)
Father		20.5% (9)		28.1% (9)		0% (0)
Grandmother		2.3% (1)		3.1% (1)		0% (0)
Aunt		4.5% (2)		6.3% (2)		0% (0)
Foster mother		4.5% (2)		3.1% (1)		8.3% (1)
Parent's race						
Min Nan/Taiwanese		88.6% (39)		93.8% (30)		75% (9)
Hakka		2.4% (1)		3.1% (1)		0% (0)
Mainlander		4.5% (2)		3.1% (1)		8.3% (1)
Mixed ethnicities		0% (0)		0% (0)		0% (0)
New immigrants from China		4.5% (2)		0% (0)		16.7% (2)
Parent's educational level*						
High school (12th-grade) or lower degree		34.1% (15)		18.8% (6)		75% (9)
College or higher degree		65.9% (29)		81.2% (26)		25% (3)
Family demographic variables						
Family income*						
Low		15.9% (7)		6.3% (2)		41.7% (5)
Middle		61.4% (27)		62.5% (20)		58.3% (7)
High		22.7% (10)		31.2% (10)		0% (0)
Family status*						
Two-parent family		59.1% (26)		75% (24)		16.7% (2)
One-parent family (including never married, separated, divorced, and widowed)		36.4% (16)		21.9% (7)		75% (9)

	Overall sample (*n* = 44)		Treatment completers (*n* = 32)		Treatment dropouts (*n* = 12)	
	***M* (*SD*)**	**%(*n*)**	***M* (*SD*)**	**%(*n*)**	***M* (*SD*)**	**%(*n*)**
Two foster-parent family		4.5% (2)		3.1% (1)		8.3% (1)
Child's behavior problems						
CBCL externalizing problem[a]	**65.70** (10.93)		**64.91** (8.99)		**67.83** (15.24)	
ECBI intensity[b]	**137.07** (34.65)		**139.03** (34.62)		**131.83** (35.68)	
ECBI problem[c]	**17.73** (8.46)		**17.41** (8.88)		**18.58** (7.51)	
Caregiver's psychological problems/disorders						
Psychological problems/disorders diagnosed by professionals[*]						
Yes	31.8% (14)			18.8% (6)		66.7% (8)
No	68.2% (30)			81.2% (26)		33.3% (4)
PAS total[*,d]	**21.16** (9.25)		18.25 (6.14)		**28.92** (11.75)	
BAI total[e]	9.75 (9.11)		7.09 (5.57)		**16.83** (12.73)	
BDI-II total[*,f]	13.59 (13.95)		10.97 (8.82)		20.58 (21.63)	
PSI Total Stress[g]	58.43 (8.83)		57.75 (8.92)		60.25 (8.72)	
PSI Life Stress[h]	10.25 (9.56)		9.25 (9.73)		12.92 (8.94)	
Caregiver's responses to child behavior						
DPICS TP	4.02 (3.71)		4.09 (4.05)		3.83 (2.62)	
DPICS NTA	18.27 (20.29)		19.31 (23.03)		15.50 (10.13)	
PICS DCR	.72 (.16)		.72 (.16)		.71 (.17)	

Note. *M* = Mean; *SD* = Standard Deviation; CBCL = Child Behavior Checklist; ECBI = Eyberg Child Behavior Inventory; PAS = Personality Assessment Screener; BAI = Beck Anxiety Inventory; BDI-II= Beck Depression Inventory-II; PSI = Parenting Stress Index; DPICS = Dyadic Parent–Child Interaction Coding System; TP= Total Praise (all labeled and unlabeled praises); NTA = Negative Talk; DCR = Direct Command Ratio (the number of direct commands divided by the sum of all commands). Bolded numbers = Clin elevated psychological symptoms.

[*] Significant differences between treatment completers and treatment dropouts. *$p < 0.00385$.

[a] CBCL cutoff score ≥ 64.

[b] ECBI intensity cutoff score ≥ 131–133.

[c] ECBI problem cutoff score ≥ 15.

[d] PAS ≥ 19.

[e] BAI Total score of 16–25= Moderate anxiety, Total score of 26–63= Severe anxiety.

[f] BDI-II Total score of 23–30 = Moderate depression, Total score of 31–63= Severe depression.

[g] PSI cutoff score ≥ 62.

[h] PSI Life Stress cutoff score ≥ 17.

Table 2

Means, standard deviations, and effect sizes for parent-report and observational measures at different assessment points or the treatment completers.

	Pre-treatment[1]	Post-treatment[2]	Three-month follow-up[3]	Main effect	Post-hoc
	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**	***F***	**Single group effect size *d***
Parent-report measures					
CBCL: Externalizing Problem Scale Scores[a]	64.91 (8.99)	55.88 (8.14)	55.97 (10.65)	31.26^{***}	$d^{21} = 1.00$, $d^{31} = 0.99$
ECBI: Intensity Scale Scores[b]	139.03 (34.62)	97.34 (27.47)	102.50 (31.06)	52.01^{***}	$d^{21} = 1.20$, $d^{31} = 1.06$
ECBI: Problem Scale Scores[b]	17.41 (8.88)	6.03 (5.93)	5.97 (5.30)	42.25^{***}	$d^{21} = 1.28$, $d^{31} = 1.29$
PSI: Total Stress Scores[a]	57.75 (9.54)	48.97 (7.00)	48.03 (8.36)	41.16^{***}	$d^{21} = 0.92$, $d^{31} = 1.02$
Behavioral observation					
DPICS CLP: Do Skills	5.25 (5.10)	44.50 (9.77)	43.66 (12.09)	237.63^{***}	$d^{21} = 7.70$, $d^{31} = 7.53$
DPICS CLP: Don't Do Skills	33.88 (19.21)	.28 (.58)	.38 (.55)	97.833^{***}	$d^{21} = 1.75$, $d^{31} = 1.74$
DPICS PLP: % of CCR	21.25 (11.79)	95.14 (8.05)	92.01 (10.35)	636.363^{***}	$d^{21} = 6.27$, $d^{31} = 6.00$
DPICS CU: % of CCR	26.03 (19.67)	94.18 (8.44)	94.45 (8.29)	301.00^{***}	$d^{21} = 3.46$, $d^{31} = 3.48$

Note. *M* = Mean; *SD* = Standard Deviation; CBCL = Child Behavior Checklist; ECBI = Eyberg Child Behavior Inventory; PSI = Parenting Stress Index; DPICS = Dyadic Parent–Child Interaction Coding System; CLP = Child-led play situation; PLP = Parent-led play situation; CU = Clean-up situation; CCR = Child compliance ratio; $d = (M_{post} — M_{pre}) / SD_{pre}$, where M_{post} was the mean value at post-treatment or at follow-up, M_{pre} was the mean value at pre-treatment, and SD_{pre} was the standard deviation at pre-treatment.

[a] T score.

[b] Raw score.

$^{***}p < .001$.

Table 3

Number of caregiver–child dyads showing clinically significant child behavior change in the successful completers and combined group.

	≥Published cutoff value		Statistically reliable change		Clinically significant change	
Measure	**No.**	**%**	**No.**	**% of RCI ≥ 1.96[a]**	**No.**	**%**
Pretreatment versus post-treatment						
CBCL Externalizing Problem	20	62.5	18	90	16	80
ECBI Intensity	17	53.1	16	94.1	14	82.4
ECBI Problem	22	68.8	22	100	19	86.4
Pretreatment versus 3-month follow-up						
CBCL Externalizing	20	62.5	15	75	11	55
ECBI Intensity	17	53.1	15	88.2	12	70.6
ECBI Problem	22	68.8	21	95.5	19	86.4

Note. CBCL = Child Behavior Checklist. ECBI = Eyberg Child Behavior Inventory. RCI = Reliable Change Index, which was used to determine whether the magnitude of the change exceeded the margin of measurement error. The RCI is calculated by dividing the magnitude of change between pretreatment and post-treatment scores or pretreatment and follow-up scores for each child by the standard error of the difference score.

[a] If a RCI value is greater than 1.96, the change is considered statistically reliable.